

IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application. An identifier indicating the status of each claim is provided.

Listing of Claims

1. (Currently Amended) A digital audio signal processing method for converting a digital audio signal, comprising:
 - a step of cutting parts out of the digital audio signal by plural windows having different sizes;
 - ~~and a plurality of steps of calculating their respective self correlation coefficients,~~
based on each piece of the cut-out parts of the digital audio signal;
 - a step of classifying the parts into a class based on the calculation results of the self correlation coefficients;
 - ~~a step of selecting a prediction method corresponding to the obtained class; and~~
 - a step of generating a new digital audio signal which is obtained by the digital audio signal, by prediction-operating the digital audio signal by the selected prediction method corresponding to the obtained class,
 - wherein a first step of calculating self correlation coefficients uses fewer samples than a second step of calculating self correlation coefficients.
2. (Currently Amended) The digital audio signal processing method as defined in claim 1,

wherein in said plurality of steps ~~step~~ of calculating self correlation coefficients, at least a general searching range and a local searching range are provided as targets for calculating the self correlation coefficients with respect to the digital audio signal, and the self correlation coefficients are calculated based on the searching ranges.

3. (Canceled)

4. (Currently Amended) A digital audio signal processing device for converting a digital audio signal, comprising:

self correlation coefficient calculation means for cutting parts out of the digital audio signal by plural windows having different sizes;

~~and a plurality of means for calculating their respective self correlation~~
coefficients based on each piece of the cut-out parts of the digital audio signal;

class-classification means for classifying the parts into a class based on the calculation results of the self correlation coefficients;

~~selecting means for selecting a prediction method corresponding to the obtained~~
class; and

prediction calculation means for generating a new digital audio signal which is obtained by converting the digital audio signal, by prediction-operating the digital audio signal by the selected prediction method corresponding to the obtained class,

wherein a first means for calculating self correlation coefficients uses fewer samples than a second means for calculating self correlation coefficients.

5. (Currently Amended) The digital audio signal processing device as defined in claim 4,

wherein said plurality of self correlation coefficient calculation means is provided with at least a general searching range and a local searching range as targets for calculating the self correlation coefficients with respect to the digital audio signal, and calculates the self correlation coefficients based on the searching ranges.

6. (Canceled)

7. (Currently Amended) A computer-readable medium adapted to store program code executed by storage medium for making a digital audio signal processing device,
~~execute a program~~ the program code including:

a step of cutting parts out of the digital audio signal by plural windows having different sizes;

~~and a plurality of steps of calculating their respective self correlation coefficients;~~

a step of classifying the parts into a class based on the calculation results of the self correlation coefficients;

~~a step of selecting a prediction method corresponding to the obtained class; and~~

a step of generating a new digital audio signal that is obtained by converting the digital audio signal, by prediction-operating the digital audio signal by the selected prediction method corresponding to the obtained class,

wherein a first step of calculating self correlation coefficients uses fewer samples than a second step of calculating self correlation coefficients.

8. (Currently Amended) The computer-readable medium~~program storage medium as defined as claimed~~ in claim 7,

wherein in said plurality of steps~~step~~ of calculating self correlation coefficients, at least a general searching range and a local searching range are provided as targets for calculating the self correlation coefficients with respect to the digital audio signal and the self correlation coefficients are calculated based on the searching ranges.

9. (Canceled)

10. (Currently Amended) A learning method for generating prediction coefficients which are used for prediction calculation of conversion processing by a digital signal processing device for converting a digital audio signal, said learning method comprising:

a step of generating, from a desired digital audio signal, a student digital audio signal in which the digital audio signal is degraded;

a step of cutting parts out of the student digital audio signal by plural windows having different sizes;

~~and a plurality of steps of calculating their respective~~ self correlation coefficients,

wherein a first step of calculating self correlation coefficients uses fewer samples than a second step of calculating self correlation coefficients;

a step of classifying the parts into a class based on the calculation results of the self correlation coefficients;

a step of calculating prediction coefficients corresponding to the class based on the digital audio signal and the student digital audio signal; and

a step of storing the prediction coefficients associated with each class.

11. (Currently Amended) The learning method as claimed ~~defined~~ in claim 10, wherein in said plurality of steps ~~step~~ of calculating self correlation coefficients, at least a general search range and a local search range are provided as targets for calculating targets of the self correlation coefficients, and the self correlation coefficients are calculated based on the searching ranges.

12. (Canceled)

13. (Currently Amended) A learning device for generating prediction coefficients which are used for prediction calculation of conversion processing by a digital signal processing device for converting a digital audio signal, said learning device comprising:

student digital signal processing means for generating, from a desired digital audio signal, a student digital audio signal in which the digital signal is degraded;

self correlation coefficient calculation means for cutting parts out from the student digital audio signal by multiple windows having different sizes;

~~and a plurality of means for calculating their respective~~ self correlation coefficients,

wherein a first means for calculating self correlation coefficients uses fewer samples than a second means for calculating self correlation coefficients;

class-classification means for classifying the parts into a class based on the calculation results of the self correlation coefficients;

prediction coefficient calculation means for calculating prediction coefficients corresponding to the class based on the digital audio signal and the student digital audio signal;
and

storage means for storing the prediction coefficients associated with each class.

14. (Currently Amended) The learning device as defined in claim 13,
wherein said plurality of self correlation coefficient calculation means is provided with at least a general searching range and a local searching range with respect to the digital audio signal as targets for calculating the self correlation coefficients and calculates the self correlation coefficients based on the searching ranges.

15. (Canceled)

16. (Currently Amended) A computer-readable medium adapted to store program code that is executed by ~~program storage medium to make a learning device, execute a program~~ the program code including:

a step of generating, from a desired digital audio signal, a student digital audio signal in which the digital audio signal is degraded;

a step of cutting parts out of the student digital audio signal by plural windows having different sizes;

~~and a~~ plurality of steps of calculating ~~their respective~~ correlation coefficients,

wherein a first step of calculating self correlation coefficients uses fewer samples than a second step of calculating self correlation coefficients;

a step of classifying the parts into a class based on the calculation results of the self correlation coefficients;

a step of calculating the prediction coefficients corresponding to the class based on the digital audio signal and the student digital audio signal; and

a step of storing the prediction coefficients associated with each class.

17. (Currently Amended) The computer-readable ~~program-storage~~ medium as ~~defined~~claimed in claim 16,

wherein in said plurality of steps ~~step~~ of calculating self correlation coefficients, at least a general searching range and local searching range are provided with respect to the digital audio signal as calculation targets of the self correlation coefficients and the self correlation coefficients are calculated based on the searching ranges.

18. (Canceled)